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(54) Interference suppression in RF signals

(57) An I/Q direct conversion receiver has an input (5,6) for receiving an RF signal comprising a wanted signal having in-phase and quadrature phase channels modulated onto in-phase and quadrature carrier signals. A signal splitter (7) divides the receiver RF signal into three in-phase signal components. Three substantially identical mixers (8) are provided and receive respective RF signal components for mixing with local oscillator signals. The first mixer (8a) receives the local oscillator signal shifted by 45°, the second mixer (8b) receives the local oscillator signal shifted by -45°, whilst the third mixer (8c) receives the local oscillator signal shifted by 180°. A correction signal is generated by summing at a summing amplifier (11) the first and second baseband signals together with the third baseband signal after appropriate scaling. The in-phase and quadrature phase baseband signals are then corrected by combining these signals at respective comparators (13) with the correction signal.

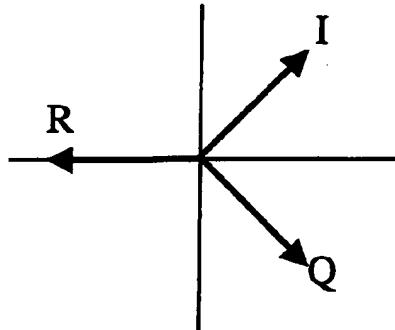


Figure 3

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EUROPEAN SEARCH REPORT

Application Number
EP 98 10 4081

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.CLS)						
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim							
D,A	US 5 179 730 A (LOPER ROGER K) 12 January 1993 (1993-01-12) * abstract; figure 3 * ---	1-9	H03D7/16 H04B15/06						
D,A	US 5 212 826 A (FELDT DANIEL C ET AL) 18 May 1993 (1993-05-18) * abstract *	1-9							
A	US 4 811 425 A (FEERST IRWIN) 7 March 1989 (1989-03-07) -----								
			TECHNICAL FIELDS SEARCHED (Int.CLS)						
			H03D H04B						
<p>The present search report has been drawn up for all claims</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Place of search</td> <td style="width: 33%;">Date of completion of the search</td> <td style="width: 33%;">Examiner</td> </tr> <tr> <td>THE HAGUE</td> <td>17 September 1999</td> <td>Peeters, M</td> </tr> </table>				Place of search	Date of completion of the search	Examiner	THE HAGUE	17 September 1999	Peeters, M
Place of search	Date of completion of the search	Examiner							
THE HAGUE	17 September 1999	Peeters, M							
EPO FORM 1500.03.92 (PAC001) CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : Intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document							

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ON EUROPEAN PATENT APPLICATION NO.

EP 98 10 4081

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17-09-1999

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5179730	A	12-01-1993	NONE	
US 5212826	A	18-05-1993	AU 641075 B AU 9178691 A CA 2071551 A,C CN 1065762 A,B DE 4143537 C DE 4193233 C DE 4193233 T FR 2670965 A GB 2256985 A,B IT 1250972 B KR 9608948 B MX 9102712 A WO 9211703 A	09-09-1993 22-07-1992 21-06-1992 28-10-1992 28-11-1996 01-06-1995 10-12-1992 26-06-1992 23-12-1992 24-04-1995 10-07-1996 01-06-1992 09-07-1992
US 4811425	A	07-03-1989	NONE	